

Claims

1. Reduction gearing (10) of an electrically operated actuator to control a
5 gaseous or liquid volume flow (98) in particular in the field of heating,
ventilation and air conditioning, fire or smoke protection, characterised in that
a modularly constructed reduction gearing (10) comprises a primary gearing
(12) with at least one drive motor (20) and a secondary gearing (14) with an
output drive (36), wherein a self-lock (16) is integrated, and the gear modules
10 (12, 14) are connected together detachably.
2. Reduction gearing (10) according to claim 1, characterised in that the gear
modules (12, 14) are mutually interchangeable, where in particular for the
same primary gearing (12) different secondary gearings (14) can be used.
- 15 3. Reduction gearing (10) according to claim 1 or 2, characterised in that the
self-lock (16) which is preferably arranged on the first free-running gear wheel
(F) is formed as a torque-limiting coupling, in particular as a friction coupling.
- 20 4. Reduction gearing (10) according to any of claims 1 to 3, characterised in that
the self-lock (16) is formed as a single or double mechanical friction coupling,
magnetic coupling or other brake coupling.
- 25 5. Reduction gearing (10) according to any of claims 1 to 4, characterised in that
the self-lock (16) has an outer friction surface (68) with a large radius (R) and
an inner friction surface (70) with a small radius (r), whereby with the same
self-lock device, different values can be set.
- 30 6. Reduction gearing (10) according to claim 5, characterised in that the outer
friction surface (68) is formed on the spur gear (F) of the primary gearing (12),
and the inner friction surface (70) on a housing part (60), or conversely.

7. Reduction gearing (10) according to any of claims 1 to 6, characterised in that the self-lock (16) is formed as an externally activated switchable coupling.
8. Reduction gearing (10) according to claim 7, characterised in that the self-lock (16) in the area of the inner friction surface (70) can be locked with a protruding trip cam (80).
9. Reduction gearing (10) according to claim 7, characterised in that the gear wheel (F) of the primary gearing (12) is firmly connected with the self-lock (16), a housing part (60) forms an annular outer friction surface (68) with a large radius (R) and a lifting bolt (88) which is adjustable in the axial direction (L_1) forms the inner friction surface (70).
10. Reduction gearing (10) according to any of claims 1 to 9, characterised in that the self-lock (16) comprises a rotationally stiff locking spring (18) which can be tensioned in the axial direction (L_1) and is preferably formed as a conical pressure spring, coil spring or leaf spring.
11. Reduction gearing (10) according to any of claims 1 to 10, characterised in that a gear wheel (F, D) in engagement with the self-lock (16) can be decoupled, preferably by way of a disengagement button (54) on the housing cover (46).
12. Reduction gearing (10) according to any of claims 1 to 11, characterised in that a potentiometer (52) for a position feedback can be coupled into the pinion of the last gear wheel (B) in the direction of the output (36) by way of a gear wheel (48) with a shaft (50).
13. Reduction gearing (10) according to any of claims 1 to 12, characterised in that the drive motor (20) is formed as a DC motor, brushless DC motor, sensorless DC motor or synchronous motor.

14. Reduction gearing (10) according to any of claims 1 to 13, characterised in that, with a view to the operating safety, an energy accumulator (40) is integrated, preferably a mechanical spring, a battery or a condenser in the housing (46) of the primary gearing (12).

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15. Reduction gearing (10) according to any of claims 1 to 14, characterised in that the secondary gearing (14) is coupled with a hollow shaft (30) to drive a flap, a tap or a linear motor for a lift valve (94) in particular a plug valve.

10 16. Use of a reduction gearing (10) according to any of claims 1 to 15 in a modularly constructed actuator with a modular housing, modular electronics (38), a sensor and COM module, and a coupling module (28).